MSD IGNITION

INSTALLATION INSTRUCTIONS

MSD Enhancer Ignition for the Yamaha Banshee

PN 05-09-2615/PN 4204

Parts Included:
1 - Programmable Enhancer Ignition, PN 05-09-2615/PN 4204

Parts Required: (Not Included)
1 - MSD 7.2 Volt NiCad Fast Charger (1 Hour), PN 00-00-1530/PN 4385
1 - Clutch Lever Micro Switch for Holeshot Feature
1 - MSD Coil Assembly, PN 30-00-3010/PN 4294
1 - Ignition Mounting Brackets, PN 15-04-0530/PN 4393
1 - MSD 7.2 Volt NiCad Battery, PN 00-00-2625/PN 4381
1 - Battery Mounting Bracket, PN 00-00-2626/PN 43811

Tools Required
#3 Phillips Screwdriver
3/8" Ratchet
10mm Socket
10mm Open End Wrench
Optional PN 05-09-4214/PN 4214 Charging Circut

Note: It is recommended that you have the factory service manual while performing this installation.

TECHNICAL INFORMATION

Spark Output: The MSD Enhancer Ignition System for the Yamaha Banshee produces a high output spark that is approximately double the stock spark output. This increased spark energy allows the use of richer fuel mixtures or even exotic fuel such as alcohol. The MSD Enhancer Ignition will put out approximately 30,000 volts to the spark plug.

Spark Plugs: With the MSD Enhancer, it is recommended to use as cold a spark plug as possible while still being able to start the engine easily. The spark plug gap will largely depend on the compression of the engine. The higher the compression the smaller the plug gap you must run. A good rule of thumb for the spark plug gap is between .032" and .036". Taking the time to test with different gaps will give you the best gap for your application.

MSD Coil and Spark Plug Wires: The MSD Coil features low resistance (0.2 Ohms Primary, 2K Ohms Secondary) with a turns ratio of 70:1 for maximum spark voltage and energy. The MSD 8.5mm Super Conductor Spark Plug Wires are very low resistance (less than 50 Ohms per foot) for maximum voltage carrying capabilites. Even with this low resistance, the wire still suppresses EMI (Electro Magnetic Interference) from disrupting the electronics of the ignition. This is the only wire recommended to be used with the MSD Enhancer Ignition System.

Adjustable Ignition Timing Curve: The MSD Enhancer Ignition system allows you to program an ignition timing curve. Changes in altitude, compression, fuel octane or a number of other variables requires that the ignition timing be compensated. The MSD Enhancer allows you to advance or retard the initial timing as well as designate a different timing curve to increase overall power and performance.

Holeshot Feature: The feature allows the user to program an rpm-limit, which enables the rider to leave the starting line quicker.

Rev Limiter: The MSD Enhancer does not have an adjustable rev limiter. The Ignition will not turn over 13,500 rpm.

7.2 Volt NiCad Battery: The MSD Enhancer Ignition System depends on a 7.2 volt battery source to supply power to the complex adjustable timing feature. The NiCad battery that is supplied with the Enhancer ignition is rated at 600 mah. This will provide approximately two hours of continuous ride time. This can be extended by purchasing a 7.2 volt NiCad battery from a local hobby shop. These batteries are available from 1400 to 1800 mah. The MSD NiCad battery can be charged with the MSD Fast Charger, PN 00-00-1530/PN 4385.The MSD Fast Charger is a 12 volt charger that will fully recharge the battery in about one an hour from your car's cigarette lighter.

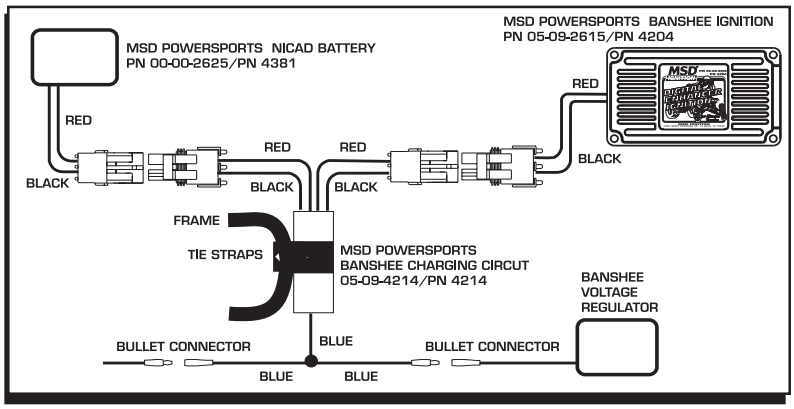

Figure 1 The MSD Charging System.

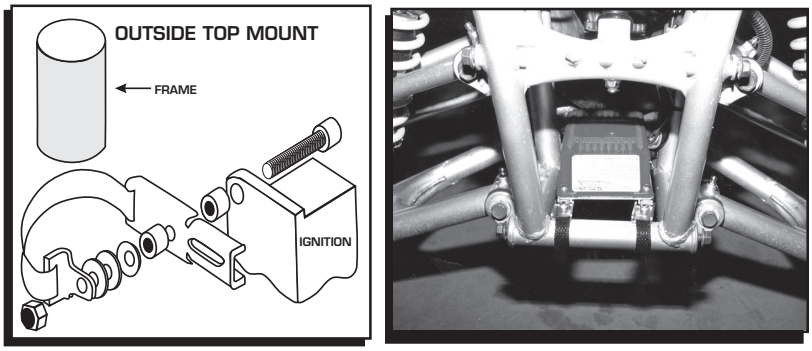

Figure 2 Mounting the Enhancer.

Although it will not hurt the ignition to leave the battery plugged in, it will produce a slight current draw on the battery causing it to discharge over an extended period of time. Also available is the MSD Charging Circut, PN 05-09-4214. The Charging Circuit will trickle charge the battery as you ride. One end of the Charging circuit plugs in between the CDI and NiCad battery. The other end plugs in to your stock voltage regulator, which supplies the power to charge the battery.

REMOVAL

In order to install the MSD Enhancer ignition system the factory CDI box and coil must be disconnected or removed. Refer to the factory service manual for the proper removal. **Note:** Do not mix the Factory Yamaha Coil and CDI unit with any MSD Components as severe damage may occur.

INSTALLATION

The MSD Enhancer Ignition is designed to mount between the front A-arms on the frame (Figure 2). Four mounting straps are supplied with the kit to hold the ignition to the frame.

1. Position the Enhancer ignition between the two A-arms but do not tighten it yet. Make sure the wire harness is routed towards the rear of the bike.
2. Route the wires with the 4-pin connector down the right side of the frame to the factory 4-pin connector from the engine magneto.

NOTE: Some early model Yamaha Banshees use a different wiring connector than the one supplied in this kit. Use the following chart to splice the MSD Enhancer harness to the Banshee (Figure 3).

Stock Banshee	***MSD Enhancer***
Red	Red
Green	Violet
White/Green	Green
White/Red	Yellow

Figure 3 Wiring Harness Change for Early Models.

3. Plug these two connectors together and secure them to the frame.
4. Using the hardware from the stock coil, mount the MSD Coil assembly to the factory coil bracket. Refer to the coil instructions for cutting and crimping the spark plug wires.
5. Route the Enhancer's Orange and Brown wire assembly to the coil and connect them to the MSD coil.
6. Find the solid Black wire on the MSD Enhancer Ignition that has a ring lug attached. This will be the ignition ground and needs to be directly attached to the engine. Clean off any paint and attach securely to the engine.

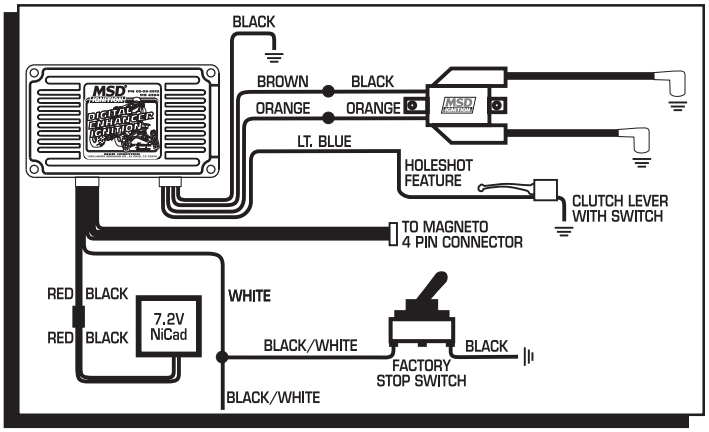

Figure 4 Connecting the MSD Kill Switch (White Wire).

7. The White wire controls the kill function of the ignition system. It can be connected one of two ways:
   A. If you do not want the Throttle OverRide System (TORS) to be functional then disconnect the Black/White wire from the ignition kill switch on he handle bar and attach the White wire to the Black/White wire that goes to the ignition kill switch.
   B. If you want to retain the TORS unit splice the White wire from the Enhancer into the Black/White wirE (Figure 3).

Note: The Stock Key switch will no longer function for ignition kill.

8. The Light Blue wire controls the "Holeshot" feature of the Enhancer Ignition System. When this wire is **connected to ground** the ignition will go into a low rpm rev limit. Typically this wire is connected to a clutch lever actuated switch (Figure 3).

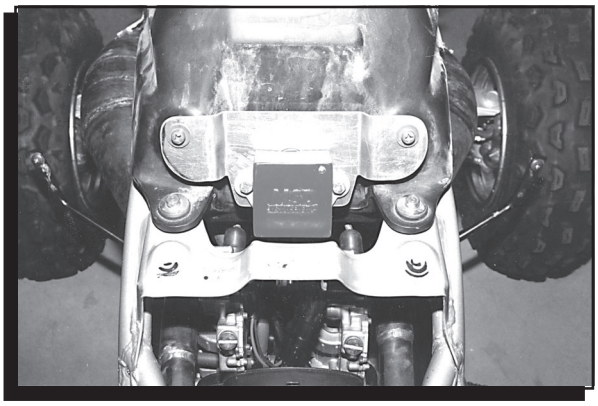

Figure 5 Mounting the NiCad Battery.

9. The NiCad battery mounts between the gas tank and the plastic body. Mount the battery to the mounting plate and slide the assembly between the plastic and the tank. Bolt both pieces to the tank with the original hardware (Figure 4).
10. Route the Red and Black wire from the Enhancer ignition to the battery. Make sure they are clear of any exhaust components and secure them to the frame.

Note: It is recommended to disconnect the battery after every ride to preserve the battery life.

PROGRAMMING

One of the many advanced features of the Enhancer Ignition System is the ability to program different timing options into the ignition system. This is especially important when making any engine modifications or running special fuels.

Note: After making any program changes you must disconnect the power from the unit and then reconnect it before the changes will take place.

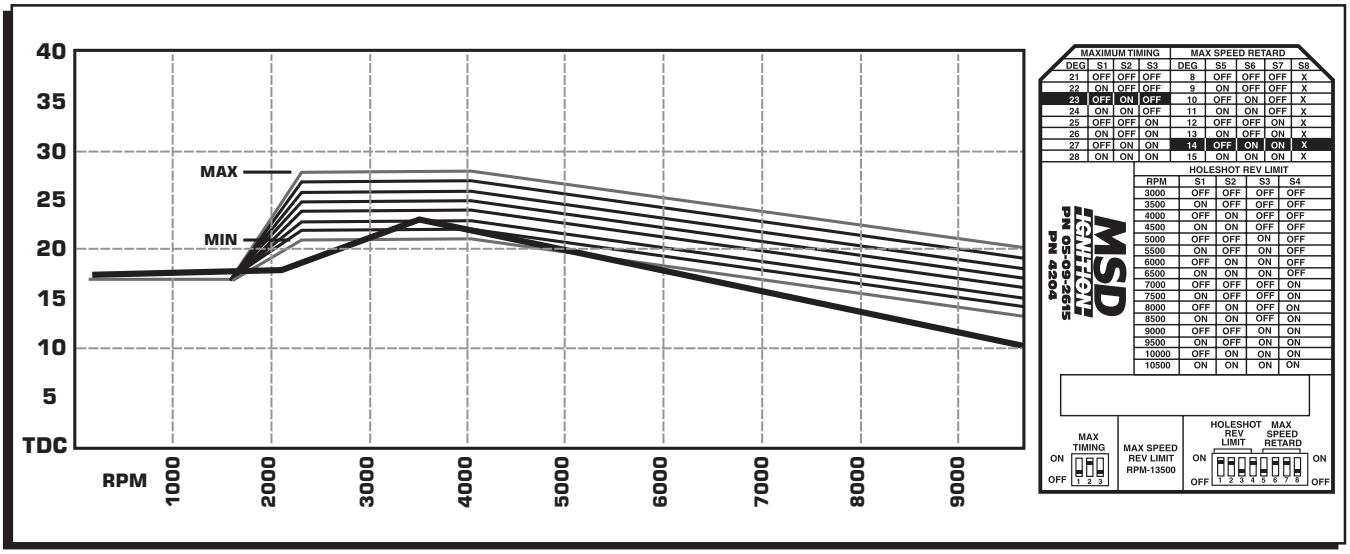

Figure 6 Max Timing Adjustments

Max Timing

Max Timing refers to the initial timing of the engine. Most systems require you to reposition the stator plate to advance or retard the ignition timing. The MSD Enhancer Ignition only requires you to select the maximum desired timing. The MSD Enhancer comes factory set at 23° of timing. This can be verified by looking at the first set of switches and making sure they are in the Off, On, and Off positions. The chart below shows the timing graph of the Enhancer as it is shipped from the factory and then the different Max Timing settings that can be achieved by changing just the Max Timing switches (Figure 5).

Holeshot Rev Limit

The Holeshot Rev Limiter switches controls the rpm point that the engine will be at when the light blue wire is activated. The first four switches (S1, S2, S3, S4, of the eight switch panel control the Holeshot rpm limits. Figure 6 shows the different switch settings. Adjustable between 3,000-10,500 RPMs in 500RPM increments.

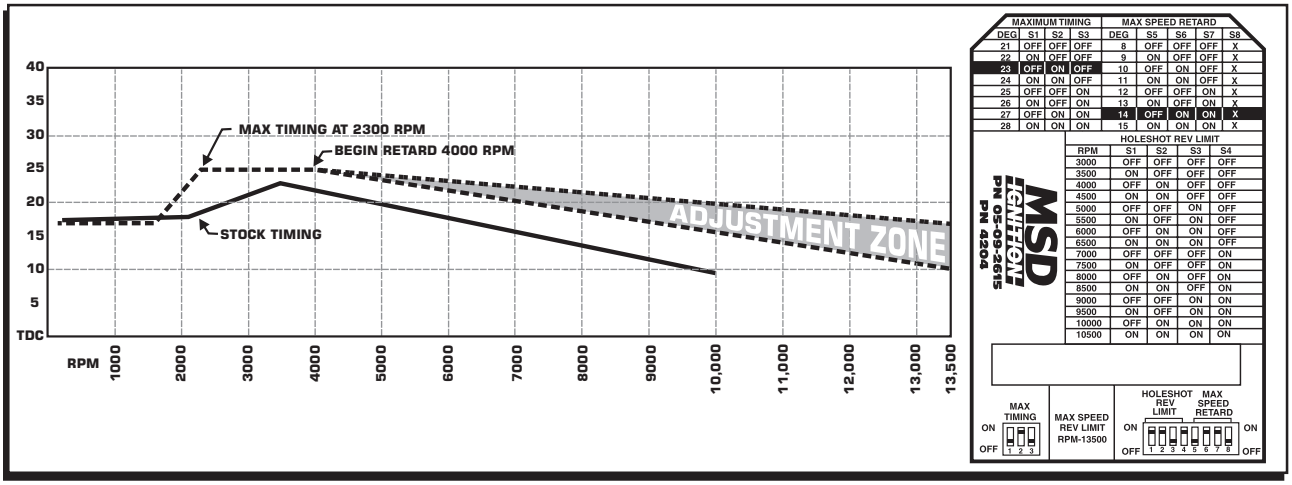

Figure 7 Max Speed Retard Adjustments

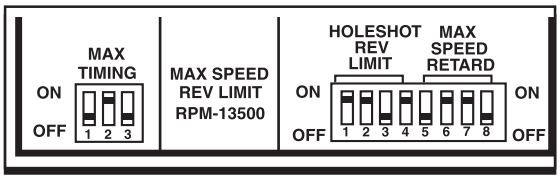

Figure 8 Selecting a Holeshot Setting.

TECH NOTES

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Service

In case of malfunction, this component will be repaired free of charge according to the terms of the warranty. When returning components for service, Proof of Purchase must be supplied for warranty verification. After the warranty period has expired, repair service is charged based on a minimum and maximum charge.

Send the unit prepaid with proof of purchase to the attention of: **Customer Service Department, MSD Powersports, 1490 Henry Brennan Dr., El Paso Texas 79936**.

When returning the unit for repair, leave all wires at the length in which you have them installed. Be sure to include a detailed account of any problems experienced, and what components and accessories are installed on the vehicle.

The repaired unit will be returned as soon as possible after receipt, COD/Cashiers Check for any charges. For more information, call the MSD Powersports Customer Service Line **(915) 858-3365**. MSD Powersports technicians are available from 8:00 a.m. to 5:00 p.m. Monday - Friday (Mountain Time).

Limited Warranty

MSD Powersports warrants this product to be free from defects in material and workmanship under its intended normal use* and if properly installed, for a period of one year from the date of original purchase. If found to be defective as mentioned above, it will be repaired or replaced at the option of MSD Powersports. Any item that is covered under this warranty will be returned free of charge through standard shipping methods. If faster service is required the customer has the option of paying for this service.

This shall constitute the sole remedy of the purchaser and the sole liability of MSD Powersports. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall MSD Powersports or its suppliers be liable for special or consequential damages.

*Intended normal use means that this item is being used as was originally intended and for the original application as sold by MSD Powersports. Any modifications to this item or if it is used on an application other than what MSD Powersports markets the product, the warranty will be void. It is the sole responsibility of the customer to determine that this item will work for the application they are intending. MSD Powersports will accept no liability for custom applications.